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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,484	02/07/2006	Hironobu Iwashita	06027/LH	8776

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EXAMINER	
TADESSE, YEWEBDAR T	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,484	IWASHITA ET AL.	
	Examiner	Art Unit	
	YEWEBDAR T. TADESSE	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 16-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim1 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, lines 9-10; the phrase "the voltage is less than a Rayleigh marginal voltage" is unclear. Applicants' Fig 9 shows the relationship of the nozzle diameter with the voltage at which a droplet to be ejected, wherein the voltage applied varies depending the diameter of a nozzle. For the purpose of examination, a variable amount of voltage is assumed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Morozov et al (US 6,350,609).

Morozov et al discloses (see Figs 24 and 32 A and column 23, lines 29-37) a liquid ejection apparatus comprising a liquid ejection head having a nozzle (52) with a tip (see Fig 2); a substrate including insulating material (see column 13, 44-48); an

electrode (50); a voltage applying device (power supply, 700), wherein the voltage applied is capable of being less than a Reyleigh marginal voltage so that the ejected droplet is not scattered and an ejection atmosphere adjusting unit (humidity controller 505) capable of controlling the dew point of the ejection atmosphere in which the droplet is ejected, the dew point is capable of being 9 degree centigrade or more and less than a water saturation temperature.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morozov et al (US 6,350,609) in view of Pui et al (US 2004/0177807 A 1).

Morozov et al discloses (see Figs 24 and 32 A and column 23, lines 29-37) a liquid ejection apparatus comprising a liquid ejection head having a nozzle (52) with a tip (see Fig 2); a substrate including insulating material (see column 13, 44-48); an electrode (50);an ejection atmosphere adjusting unit (humidity controller 505) capable of controlling the dew point of the ejection atmosphere in which the droplet is ejected, the dew point is capable of being 9 degree centigrade or more and less than a water saturation temperature; and a voltage applying device (power supply), wherein the voltage applied is capable of being less than a Reyleigh marginal voltage so that the ejected droplet is not scattered. In any event, Pui et al teaches in using an electrospraying apparatus electrical charge concentrated on a particular particle is preferably in the range of about 80-95 percent of the Rayleigh charge limit preventing droplet disintegration (see paragraph 50, at 100% disintegration of droplet occur). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a voltage less than a Rayleigh marginal voltage to prevent disintegration of droplets as taught by Pui et al.

As to claims 16-18, in Morozov et al the nozzle (capillary) is capable of having the claimed diameter (see column 11, lines 64-65 for a capillary having diameter of 20 microns). Pui et al also discloses (see paragraph 99) inner diameter of capillary tube being about 6 microns. In any event, it would have been an obvious matter of design choice to have the claimed inner diameter in Morozov et al, since such a modification

would have involved a mere change in the size of a component. A change of size is generally recognized as being within the ordinary level of skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

8. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morozov et al (US 6,350,609).

In Morozov et al the nozzle (capillary) is capable of having the claimed diameter (see column 11, lines 64-65 for a capillary having diameter of 20 microns). In any event, it would have been an obvious matter of design choice to have the claimed inner diameter in Morozov et al, since such a modification would have involved a mere change in the size of a component. A change of size is generally recognized as being within the ordinary level of skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Response to Arguments

9. Applicant's arguments filed 03/20/2009 have been fully considered but they are not persuasive. Applicants argue that Morozov et al does not disclose the claimed feature wherein the voltage is less than a Rayleigh marginal voltage and refers column 1, lines 23-43 of Morozov et al, wherein Morozov et al teaches in the Background of the invention about the method of electrospray that the application of high voltage resulting in instability of the liquid and the microdroplets evaporation, if solvent pressure is low enough and the size of the droplet reach a Raleigh limit and later formation of nanoclusters. Examiner respectfully disagrees because applicants' argument is

directed to the intended used of the apparatus or method limitation. As explained in the rejection above, Morozov et al discloses all claimed structural elements of the invention, as well as the device disclosed by Morozov et al (see Figs 24 &32A) is capable of meeting the intended use of the apparatus, wherein the voltage is less than a Rayleigh marginal voltage, (adjustable power supply 700 is capable of applying variable amount of voltage; see Fig 24).

Additionally, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus shows all of the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) Furthermore, "expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666,667 (Bd. App. 1969). Thus, the "inclusion of material or article worked upon does not impart patentability to the claims." In re Young, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 312 F.2d 937, 136 (USPQ 458, 459 (CCPA 1963)). In this case the inclusion of the material (voltage) does not impart patentability to the claims.

As shown in Figs 24 and 32A) Morozov et al discloses a voltage applying unit applying variable amount of voltage. Structurally, Morozov et al meets (see Figs 24 and 32A) the claimed apparatus comprising a liquid ejection head, an ejection electrode, and a voltage applying unit and an atmosphere adjusting unit. With respect to argument that in Morozov et al "humidity is typically kept at about 10-30%", it is also noted that

Morozov et al teaches (see column 23, lines 31-35) the humidity meter (505) in communication with sensors (506) controlling the evaporation rate (capable of controlling the atmosphere dew point in which the droplet is ejected to the desired temperature). For at least the reasons described above the examiner maintains the rejections over Morozov et al in view of others.

Per applicants' amendment and argument the rejection over Matsuba et al in view of others is withdrawn. In Matsuba et al the ejection atmosphere adjusting unit keeps a dew point in an atmosphere of the piezoelectric element and the vicinity of piezoelectric element at a lower value than a dew point of in an environment where the ink jet recording apparatus is set (not keeping the atmosphere in which the droplet is ejected from the liquid ejection head as claimed).

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YEWEBDAR T. TADESSE whose telephone number is (571)272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yewebdar T Tadesse/
Primary Examiner, Art Unit 1792